REMARKS

Claim Amendments and New Claims

Claim 1 has been amended to add the subject matter of claim 3 into claim 1, and claim 3 has been canceled. Claim 10 has been amended to add the subject matter of claim 15 into claim 10, and claim 15 has been canceled. Claim 21 has been amended to add the subject matter of claim 24 into claim 21, and claim 24 has been canceled. Claim 34 has been amended with subject matter similar to the subject matter in now canceled claims 15 and 24. New claims 37 and 38 are supported, e.g., by the original claims and by page 2, line 23 to page 3, line 26.

35 U.S.C. §101 Rejections

The Examiner rejected claims 1-9, 32, and 33 under 35 U.S.C. §101.

With regard to claims 1-3, the Examiner asserts that the protection being sought is patent protection for a computer process/algorithm which is a judicial exception to 35 U.S.C. §101. The Examiner also asserts that the "result" of "removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile" does not require a physical transformation and the invention as disclosed does not produce a useful, concrete, and tangible result. Applicant respectfully disagrees.

Claim 1 recites the subject matter of "processing the received signal in the searcher, at least partially via deconvolution, *to obtain a multi-path profile* of the radio channel, where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile." Although the Examiner asserts that the "result" of claim 1 is "removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile", a result of claim 1 is instead the *multi-path profile*. The *multi-path profile* is a useful, concrete, and tangible *result*. The multi-path profile is useful because the multi-path profile can be used in a receiver in order to receive information that then may be presented to a user. The multi-path profile is concrete and tangible, as other

elements or steps can rely on the multi-path profile. In fact, in dependent claim 2, the multi-path profile is output to a controller for use in making demodulator finger assignments.

Moreover, claim 1 and its multi-path profile comport with the purported requirements in M.P.E.P. §2106.IV.C.2,(2)(a), (b), and (c). See page 2100-12 of M.P.E.P. (8th ed., Aug 2006 Revision). Claim 1 meets the utility requirement (see (a) on page 2100-12) (i.e., see, e.g., page 11, line 29 to page 12, line 8 of Applicant's specification), the multi-path profile is not abstract (see (b) on page 2100-12) (i.e., the multi-path profile may be used by other elements of a receiver), and the multi-path profile is repeatable and predictable (see (c) on page 2100-12) (i.e., using the same CDMA signal, the multi-path profile will be the same).

Consequently, claim 1 produces a result that is useful, concrete, and tangible. Claim 1 and its dependent claims therefore are patentable under §101.

With regard to claims 4-9, independent claim 4 recites the subject matter of "processing the received signal in the searcher to obtain *a multi-path profile* of the radio channel, where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile, wherein said at least partially removing comprises passing the received CDMA signal through a processing unit that uses a least squares criterion to derive the radio channel *multi-path profile* x from a searcher profile y, where $y = F \cdot x + v$, where v is a noise vector and F is a transmit/receive matrix." As with claim 1, the *multi-path profile* of claim 4 is a useful, concrete, and tangible *result*. The arguments with respect to claim 1 are equally valid with respect to claim 4. Consequently, claim 4 and its dependent claims 5-9 are patentable under 35 U.S.C. §101.

It is also noted that independent claim 4 contains subject matter similar to the subject matter in independent claims 17 and 26, which are allowed. It is unclear as to why the Examiner treats claim 4, which is a method claim, differently from claims 17 (an apparatus claim) and 26 (a mobile station claim). The Court of Appeals for the Federal Circuit has stated the following:

Each claim component, recited as a "means" plus its function, is to be read, of course, pursuant to Section 112, Para. 6, as inclusive of the "equivalents" of the structures disclosed in the written description portion of the specification. Thus, claim 1, properly construed, claims a machine, namely, a data processing system for managing a financial services configuration of a portfolio established as a partnership, which machine is made up of, at the very least, the specific structures disclosed in the written description and corresponding to the means-plus-function elements (a)-(g) recited in the claim. A "machine" is proper statutory subject matter under Section 101. *We note that, for the purposes of a Section 101 analysis, it is of little relevance whether claim 1 is directed to a "machine" or a "process," as long as it falls within at least one of the four enumerated categories of patentable subject matter, "machine" and "process" being such categories.*

State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 47 USPQ2d 1596, 1599-1600 (Fed. Cir. 1996) (emphasis added). It is believed, based on this cited text, that the Examiner should either reject all of claims 4, 17, and 26 under §101 or none of claims 4, 17, and 26 under §101. Regardless, Applicant submits that all of claims 4, 17, and 26 are patentable under 35 U.S.C. §101 for at least the reasons given above with respect to claim 4.

With regard to claim 32, this claim recites the subject matter of "processing the received signal in the searcher to generate *output data for the finger assignment algorithm that represents a multi-path profile of the radio channel*, where processing comprises passing the received CDMA signal through a filter selected to have a filter characteristic that approximates an inverted response of at least one of a base station transmit filter or at least one mobile station receive filter so as to reduce an occurrence of multi-path sidelobes in the output data." With regard to claim 33, this claim recites the subject matter of "processing the received signal in the searcher to generate *output data for the finger assignment algorithm that represents a multi-path profile of the radio channel*, where processing comprises passing the received CDMA signal through a processor unit that operates in accordance with a least squares criterion to derive the radio channel *multi-path profile* x from a searcher profile y, where $y = F \cdot x + v$, where v is a noise vector and F is a transmit/receive matrix, so as to reduce an occurrence of multi-path sidelobes in the output data."

The *output data* that represents a multi-path profile of the radio channel (in claims 32 and 33) is a useful, concrete, and tangible *result*. The output data is useful because the output data represents the multi-path profile and the output data can be used in a receiver in order to receive information that then may be presented to a user. The output data representing the multi-path profile is concrete and tangible, as other elements or steps can rely on the output data representing the multi-path profile.

Moreover, claims 32 and 33 and their output data representing the multi-path profile comport with the purported requirements in M.P.E.P. §2106.IV.C.2,(2)(a), (b), and (c). See page 2100-12 of M.P.E.P. (8th ed., Aug 2006 Revision). Claims 32 and 33 meet the utility requirement (see (a) on page 2100-12) (i.e., see, e.g., page 11, line 29 to page 12, line 8 of Applicant's specification), the output data representing the multi-path profile is not abstract (see (b) on page 2100-12) (i.e., the output data representing the multi-path profile may be used by other elements of a receiver), and the output data representing the multi-path profile is repeatable and predictable (see (c) on page 2100-12) (i.e., using the same CDMA signal, the output data representing the multi-path profile will be the same).

Consequently, claims 32 and 33 recite a result, the output data, that is concrete, tangible, and useful. Claims 32 and 33 are therefore patentable under 35 U.S.C. §101.

35 U.S.C. §103 Rejections

The Examiner rejected claims 1, 2, 8, and 9 under 35 U.S.C. §103(a) as being unpatentable over the Applicant's admitted prior art in view of Eran et al., U.S. Patent No. 6,862,326. Applicants do not admit that anything in the Background section is admitted prior art.

Even if the Background section could be considered to have admitted prior art (which Applicant does not admit), the combination of the cited sections of the Background section and Eran does not teach all elements of the claims. For instance, amended claim 1 recites the subject matter of "processing the received signal in the searcher to obtain a multi-

path profile of the radio channel, where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile, *where at least partially removing comprises passing the received CDMA signal through a filter selected to have a filter characteristic that approximates an inverted amplitude or power response of the at least one of the transmit filter or the receive filter*". Applicants cannot find at least the highlighted subject matter in the combination of the Background section and Eran.

What Eran discloses is a whitening matched filter 40, which includes a matched filter 42 and a noise whitening filter 44. See FIG. 2 of Eran. The matched filter 42 is described by Eran at col. 14, lines 5-17. In that section, the matched filter's impulse response is related to a time limited series of the channel impulse response. Eran does state the following:

> The channel impulse response (CIR) is considered to comprise the overall response of the following factors along the signal path: transmit filter, fading channel propagation path response, receive filter and any post-filtering done before channel estimation is performed, for example channel equalization or interference suppression.

Eran, col. 13, line 66 to col. 14, line 4. However, it is believed that by selecting the matched filter's impulse response as being the time limited series of the channel impulse response, the signal-to-noise ratio of the received signal is basically maximized relative to the channel impulse response. In other words, because the matched filter in Eran matches the channel impulse response, the matched filter (along with the whitening filter, described below) in Eran "compensate[s] for the coloration potentially added by the transmit pulse shaping filter, channel distortion including multipath propagation and fading, receive filter and any pre-channel estimation filtering." Eran, col. 2, line 66 to col. 3, line 4.

Eran also discloses that the whitening filter is formed at least in part by determining a maximum phase portion of the channel impulse response and subtracting this portion from the output of the matched filter 42. See FIG. 3 and FIG. 4 and col. 12, line 12 to col. 13, line 60 of Eran.

Nonetheless, there is no disclosure or implication in Eran of at least the subject matter of "where at least partially removing comprises passing the received CDMA signal through a filter selected to have a filter characteristic that approximates an inverted amplitude or power response of the at least one of the transmit filter or the receive filter", as the matched filter in Eran is related to the channel impulse response and not to a filter having a filter characteristic that approximates an inverted amplitude or power response of a transmit or receive filter, and the whitening filter in Eran is unrelated to a filter having a filter characteristic that approximates an inverted amplitude or power response of a transmit or receive filter.

Therefore, claim 1 is patentable over the combination of the Background section and Eran. Dependent claims 2, 8, and 9, which depend from claim 1, are patentable for at least the reasons give with respect to claim 1.

With regard to the rejections of claims 10-14 based on the Background section and Eran, the combination of the Background section and Eran does not disclose at least the subject matter in claim 10 of "a deconvolution searcher block having an input coupled to an output of the receiver front end for inputting a received signal and an output for outputting a digital representation of a radio channel multi-path profile to a control function, said deconvolution searcher block comprising a unit configured to process the received signal to at least partially remove an effect of at least said receiver filter on the multi-path profile, *the unit comprising a filter having a filter characteristic that approximates an inverted amplitude response of at least said receiver filter*".

The argument given above with respect to claim 1 is also valid here. In particular, as the matched filter in Eran is related to the channel impulse response and not to a filter having a filter characteristic that approximates an inverted amplitude response of at least a receiver filter, and the whitening filter in Eran is unrelated to a filter having a filter characteristic that approximates an inverted amplitude response of at least a receiver filter.

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Because claim 10 is patentable over the combination of the Background section and Eran, its dependent claims 11-14 are also patentable for at least the reasons give with respect to claim 10.

With regard to the rejections of claims 21-23, 30, 31, and 34-36 based on the combination of the Background section and Eran, amended claim 21 recites "said mobile station comprising a unit to at least partially remove, at least partially via deconvolution, an effect of at least said receiver filter on the multi-path profile, *where said unit comprises a filter having a filter characteristic that approximates an inverted response of at least said mobile station receiver filter.*" The argument given above with respect to claim 10 is equally valid for claim 21, as the matched filter in Eran is related to the channel impulse response and not to a filter having a filter characteristic that approximates an inverted amplitude response of at least a receiver filter, and the whitening filter in Eran is unrelated to a filter having a filter characteristic that approximates an inverted amplitude response of at least a receiver filter.

Claim 21 is patentable over the asserted combination of the Background section and Eran. Claim 35 recites similar subject matter to claim 21. In particular, claim 35 recites "said searcher comprising a deconvolution processing block configured to process the received CDMA signal to at least partially remove an effect of at least a receiver filter in the receiver front end on the multi-path profile, *the deconvolution processing block comprising a filter having a filter characteristic that approximates an inverted amplitude response of at least said receiver filter*", at least the highlighted text of which was shown above as not being disclosed or implied by Eran. Therefore, the combination of the Background section and Eran are do not disclose at least this subject matter, and claim 35 is patentable. Dependent claims 22, 23, 30, 31, 36, and 37 are also patentable, as these claims depend from claims 21 and 35.

Regarding claim 32, which is rejected base on a combination of the Background section and Erikmats (U.S. Patent No. 4,085,225), Applicants respectfully disagree. Claim 32 recites the subject matter of "processing the received signal in the searcher to generate output data for the finger assignment algorithm that represents a multi-

path profile of the radio channel, where processing comprises passing the received CDMA signal through *a filter selected to have a filter characteristic that approximates an inverted response of at least one of a base station transmit filter or at least one mobile station receive filter* so as to reduce an occurrence of multi-path sidelobes in the output data."

By contrast, Erikmats passes a received signal through an inverse filter that has a transfer function of $H(z) = C^{-1}(z)$, where $C^{-1}(z)$ is the "inverse" (in a transfer function sense) of the code, $C(z)$, used to modulate a sinusoidal carrier signal. See col. 3, line 65 to col. 4, line 17 of Erikmats. See also col. 2, lines 39-57 and FIG. 2 of Erikmats for a description of how the code modulates the sinusoidal carrier signal.
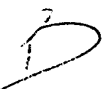
Consequently, the inverse filter in Erikmats is related to the inverse transfer function of a modulating code and unrelated to "a filter selected to have a filter characteristic that approximates an inverted response of at least one of a base station transmit filter or at least one mobile station receive filter" as recited in claim 32. Claim 32 is therefore patentable over the Background section and Erikmats.

For at least the foregoing reasons, the Applicant believes that each and every issue raised by the Examiner has been adequately addressed and that this application has now been placed in condition for allowance. As such, early and favorable action is therefore respectfully solicited.

Based on the foregoing arguments, it should be apparent that the remaining claims are thus allowable over the reference(s) cited by the Examiner, and the Examiner is respectfully requested to reconsider and remove the rejections. The Examiner is invited to call the undersigned attorney for any issues.

Respectfully submitted:

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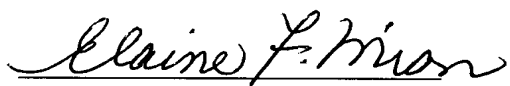
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